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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

BATTAGLIA, MICHAEL V

ART UNIT	PAPER NUMBER
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2652

DATE MAILED: 07/15/2004

3

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/044,597

Applicant(s)

NANGLE, PETER

Examiner

Michael V Battaglia

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 6 and 18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-17 and 19-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

Election/Restrictions

1. This application contains claims directed to the following patentably distinct species of the claimed invention: The method, apparatus, and article that work with the device of:

a.) Fig. 2

b.) Fig. 3

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, claims 1, 9, 13, 20, and 22 are generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the

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evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

2. During a telephone conversation with Scott C. Harris on July 1, 2004 a provisional election was made without traverse to prosecute the invention of Fig. 2, claims 1-5, 7-17 and 19-23. Affirmation of this election must be made by applicant in replying to this Office action. Claims 6 and 18 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Specification

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

4. Claim 15 is objected to because of the following informality. On lines 3, replacing "apparatus" with -memory device— is suggested so that the claim matches the description provided on Page 7, line 15-Page 8, line 2 of the specification. Appropriate correction is required. Claim 15 will be interpreted as if the suggested correction has been made in the claim rejections below.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 5, 7, 9-14, 16, 17 and 19-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Toyooka et al (hereafter Toyooka) (US 4,778,672).

It is noted that transition times between crystalline (erased/unrecorded) and amorphous (recorded) states in a phase change recording medium are asymmetric because a transition to the amorphous state is achieved by rapidly heating and rapidly cooling the phase change material and a transition back to the crystalline state is achieved by slowly heating and slowly cooling the phase change material (see Citation of Relevant Prior Art). Therefore, the transition to the crystalline state is interpreted as having a longer transition time to achieve and the transition to the amorphous state is interpreted as having a shorter transition time to achieve. Transition time is interpreted as required transition between the at least two states of a phase change material.

In regard to claim 1, Toyooka discloses a method comprising: causing a device including a plurality of memory cells to be programmed between at least two states by exclusively transitioning a plurality of said cells from a first state to a second state (Fig. 6, element 67). Toyooka discloses that the method programs a phase change optical disc memory (Col. 2, lines 50-53 and Col. 5, lines 30-39). As noted above, a phase change optical disc memory has asymmetric transition times. The erased and not used state of Toyooka is interpreted as the crystalline state and as the claimed first state and the recorded state of Toyooka is interpreted as the amorphous state and as the claimed second state. As noted above, the transition to the crystalline state is interpreted as having a longer

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transition time to achieve and the transition to the amorphous state is interpreted as having a shorter transition time to achieve.

In regard to claim 2, Toyooka discloses that the method further comprises setting each of said plurality of memory cells to the first state prior to said programming (Fig. 6, element 67).

In regard to claim 3, Toyooka discloses that each memory cell includes a phase change material (Col. 2, lines 50-53 and Col. 5, lines 30-39).

In regard to claim 5, Toyooka discloses that said transitioning comprises heating each of said memory cells (Col. 5, lines 30-39).

In regard to claim 7, Toyooka discloses that said heating comprises directing an energy beam to a memory cell (Col. 5, lines 30-39).

In regard to claim 9, Toyooka discloses a method comprising: setting a plurality of memory cells in a zone of a memory device with asymmetric transition times between at least two states to a first state having a transition time to achieve (Fig. 7, element 72); and programming the zone by exclusively transitioning cells from the first state to a second state having a shorter transition time to achieve (Fig. 6, element 67). Toyooka discloses that the method programs a phase change optical disc memory (Col. 2, lines 50-53 and Col. 5, lines 30-39). As noted above, a phase change optical disc memory has asymmetric transition times. The erased and not used state of Toyooka is interpreted as the crystalline state and as the claimed first state and the recorded state of Toyooka is interpreted as the amorphous state and as the claimed second state. For the reasons stated above, the amorphous state has a shorter transition time to achieve.

In regard to claim 10, Toyooka discloses that the method further comprises receiving a command to set memory cells in the zone to the first state (Col. 7, lines 24-26); and setting said memory cells to the first state (Fig. 7, element 72). It is noted that an instruction to set the memory cells to the first state is inherently received when the optical disc memory is not accessed, causing the erase operation to begin.

In regard to claim 11, Toyooka discloses that the method further comprises setting the memory cells to the first state after a first use of the device (Fig. 7, element 72).

In regard to claim 12, Toyooka discloses that the method further comprises receiving an indication that the memory device is preparing to initiate a data download (Col. 3, lines 46-48); and setting said plurality of memory cells in the zone to the first state (Fig. 7, element 72).

In regard to claim 13, Toyooka discloses an apparatus comprising: a writer unit (Fig. 1, elements 2 and 3) operative to write data to a memory device having an asymmetric transition time between two memory states, wherein a transition from a first memory state to a second memory state takes longer than a transition from the second memory state to the first memory state; and a controller (Fig. 1, element 11) operative to control the write unit to write exclusively to memory cells to be transitioned to the first memory state (Fig. 6). Toyooka discloses that the method programs a phase change optical disc memory (Col. 2, lines 50-53 and Col. 5, lines 30-39). As noted above, a phase change optical disc memory has asymmetric transition times. The erased and not used state of Toyooka is interpreted as the crystalline state and as the claimed second memory state and the recorded state of Toyooka is interpreted as the amorphous state and as the claimed first memory state. For

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the reasons stated above, a transition from the first memory state to the second memory state takes longer than a transition from the second memory state to the first memory state.

In regard to claim 14, Toyooka discloses that the apparatus comprises a non-volatile phase change memory device (Col. 2, lines 50-53 and Col. 5, lines 30-39).

In regard to claim 16, Toyooka discloses that the controller is operative to control the write unit to reset a plurality of memory cells in a zone to the second memory state (Fig. 7, element 72).

In regard to claim 17, Toyooka discloses that the controller is operative to control the write unit to write exclusively to memory cells in the zone (Fig. 6, element 67).

In regard to claim 19, Toyooka discloses that the write unit comprises an optical disc writer (Fig. 1, elements 2 and 3).

In regard to claim 20, Toyooka discloses an article (Fig. 1, element 11 and Col. 4, lines 37-38) comprising a machine-readable medium including machine-executable instructions, the instructions operative to cause a machine to: cause a device (Fig. 1, element 1) including a plurality of memory cells to be programmed with asymmetric transition times between at least two states by exclusively transitioning a plurality of said cells from a first state having a longer transition time to achieve to a second state having a shorter transition time to achieve (Fig. 6, element 67). Toyooka discloses that the instructions cause a phase change optical disc memory to be programmed (Col. 2, lines 50-53 and Col. 5, lines 30-39). As noted above, a phase change optical disc memory has asymmetric transition times. The erased and not used state of Toyooka is interpreted as the crystalline state and as the claimed first state and the recorded state of Toyooka is interpreted as the amorphous state and as the claimed second state. As noted above, the

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transition to the crystalline state is interpreted as having a longer transition time to achieve and the transition to the amorphous state is interpreted as having a shorter transition time to achieve.

In regard to claim 21, Toyooka discloses that the article further comprises instructions operative to cause the machine to set each of said plurality of memory cells to the first state prior to said programming (Fig. 7, element 72).

In regard to claim 22, Toyooka discloses an article (Fig. 1, element 11 and Col. 4, lines 37-38) comprising a machine-readable medium including machine-executable instructions, the instructions operative to cause a machine to: set a plurality of memory cells in a zone of a memory device with asymmetric transition times between at least two states to a first state having a transition time to achieve (Fig. 7, element 72); and program the zone by exclusively transitioning cells from the first state to a second state having a shorter transition time to achieve (Fig. 6, element 67). Toyooka discloses that the instructions cause memory cells of a phase change optical disc memory to be set and programmed (Col. 2, lines 50-53 and Col. 5, lines 30-39). As noted above, a phase change optical disc memory has asymmetric transition times. The erased and not used state of Toyooka is interpreted as the crystalline state and as the claimed first state and the recorded state of Toyooka is interpreted as the amorphous state and as the claimed second state. For the reasons stated above, the amorphous state has a shorter transition time to achieve.

In regard to claim 23, Toyooka discloses that the article further comprises instructions operative to cause the machine to: receive a command to set memory cells in the zone to the first state (Col. 7, lines 24-26); and set said memory cells to the first state (Fig. 7, element 72). It is noted that an instruction to set the memory cells to the first state

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must be received for the erase operation to begin when the optical disc memory is not accessed.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Toyooka as applied to claim 3 in view of Young et al (hereafter Young) (US 4,719,594).

Toyooka does not specify the type of phase change material used in its phase change type optical disc memory (Col. 5, lines 30-39).

Young discloses that chalcogenide alloys have a phase change with detectable properties, have states that are stable at temperatures encountered in storage and operation, and are the phase changeable material normally used as a phase changeable optical data storage material (Col. 9, lines 43-49).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for the phase changeable material of Toyooka to comprise a chalcogenide alloy as suggested by Young, the motivation being to use the material that is normally used as a phase changeable optical data storage material, has a phase change with detectable properties, and has states that are stable at temperatures encountered in storage and operation.

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7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Toyooka in view of Maeda et al (US 5,317,549).

Toyooka does not disclose that the method further comprises determining if the device has been written to; and setting an indicator to a used status in response to determining that the device has been written to.

Maeda discloses determining if a device (Fig. 2, element 1) has been written to (Fig. 1, element S6); and setting an indicator to a used status in response to determining that the device has been written to (Fig. 1, element S7 and Col. 10, lines 19-23). After the indicator is set, it becomes possible to promptly determine that a disc is blank (Col. 11, lines 8-10). It is noted that Maeda discloses employing a phase change type recording medium (Col. 11, lines 53-56).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate into the method of Toyooka determining if a device has been written to and setting an indicator to a used status in response to determining that the device has been written to as suggested by Maeda, the motivation being to promptly determine that a disc is blank.

8. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Toyooka as applied to claim 13 in view of Kuroda et al (hereafter Kuroda) (US 5,818,807).

Toyooka discloses that the apparatus of claim 13 further comprises a reader unit (Fig. 1, elements 2 and 3 and Fig. 5). Toyooka further discloses that the controller is operative to control the write unit to write exclusively to memory cells to be transitioned to the first memory state (Fig. 6). It is noted that in Fig. 6, only memory cells in the crystallized second memory state are written to and transitioned to the first memory state.

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Toyooka does not disclose that the reader unit is operative to determine if a use of the apparatus is a first use and does not disclose that the controller controls the write unit to write in response to determining that the use is the first use.

Kuroda discloses a reader unit (Fig. 2, element 3) that is operative to determine if a use of the apparatus is a first use (Fig. 3, element S5 and Col. 4, lines 53-56). Kuroda further discloses controlling a write unit (Fig. 2, element 3) to write in response to determining that the use is the first use (Fig. 3, elements S6 and S7 and Col. 4, lines 57-61). The writing in response to the determination that the use is a first use is carried out to set the strength of the laser beam to an optimized power (Col. 4, lines 61-64). It is noted that Kuroda discloses applying the invention to a phase change optical disc (Col. 6, lines 52-53).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made for the reader unit of Toyooka operative to determine if a use of the apparatus is a first use as suggested by Kuroda and for the controller of Toyooka to control a write unit to write in response to determining that the use is the first use as suggested by Kuroda, the motivation being to set the strength of the laser beam to an optimized power.

Citation of Relevant Prior Art

9. Yagi et al (US 5,699,342) discloses that a phase change optical medium is rapidly heated and rapidly cooled to fix the medium in an amorphous state during recording and the medium is slowly heated and slowly cooled to resume a crystalline state during erasing (Col. 1, lines 38-45). Sano et al (US 5,177,717) discloses that the recording time is generally less than the erasing time for the recording layer of a phase change optical disc

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(Col. 4, lines 31-38; Col. 5, lines 3-5; and Col. 6, lines 22-28). Goto et al (US 5,107,482) discloses crystallizing or amorphousizing phase change material in an optical recording medium by using different irradiation times wherein the irradiation time for crystallization is longer than the irradiation time for amorphousization (Fig. 7, elements 703 and 704). Shingai discloses crystallizing a recording layer of a phase change optical disc during initialization (Cols. 5 and 6).

Conclusion

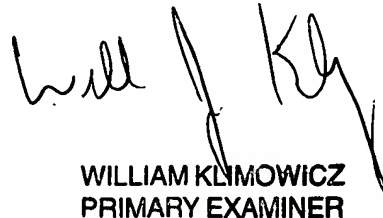
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael V Battaglia whose telephone number is (703) 305-4534. The examiner can normally be reached on 5-4/9 Plan with 1st Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T Nguyen can be reached on (703) 305-9687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Michael Battaglia


WILLIAM KLIMOWICZ
PRIMARY EXAMINER